1.1 Radio Astronomy

1.1.1 Maintenance and Calibration

- Repeated MarkIV DAT video converters performance test for spectroscopy observations, with 2MHz bandwidth filters. Result is consistent with previous test at 16MHz bandwidth. Spikes detected during last observation are corrected if signal level into the VC is properly adjusted.
- Performed backups of RAC60, RAC60A and RAC60B workstations.
- Initiated DSS-63 K-band s/w migration from RAC60A HP-Unix workstation to new RAC60B Debian linux PC.
- Performed an observing test at Q-band with DSS-54 antenna, using the Antenna Calibration and Measurement Equipment -ACME-, (Advanced Tracking and Observational Techniques -ATOT-, 370min).

1.1.2 Research and Development

Imparted an advanced training course on K-band Operations to the Host Country radio astronomers from LAEFF (INTA).

1.1.3 Training courses

Imparted a real-time training course to MDSCC Operations on Radio Astronomy Operations.

1.1.4 Observations

1.1.4.1 Host Country Spectroscopy

During this month spectroscopy observations with DSS-63 antenna were carried out using the SPB500 spectrometer and the MarkIV data acquisition terminal. Following Host Country projects were performed using DSS-63 antenna:

- **D63-S01:** study of CCS molecule (22.334 GHz) extended emission in young low-mass proto-stars. The CCS molecule is abundant in molecular clouds during the first stages of star formation. We plan to make maps of its emission in several start-forming regions, to study their physical conditions and chemical processes in the cloud.

- **D63-S09:** Target of opportunity (TO): confirmation of a tentative detection of ammonia (NH3) emission towards a very young and cold brown dwarf.

DOY	minutes scheduled	minutes used	Percent good data	Activity	comments
222	415	0	0	"GBRA Host Country D63-S01"	comm. problems
235	425	425	80	"GBRA Host Country D63-S01/S09"	RFI
238	400	400	50	"GBRA Host Country D63-S01"	RFI solved

1.1.4.2 Interferometry

MDSCC participated in 4 Very Long Baseline Interferometric (VLBI) observations (2160 min in total):

- RFC Clock Synchronization on DSS-65 (3 observations; 720 min): For the first two observations 100% data collected; performance of the system nominal. For the last observation ten sources were lost or late due to a problem with azimuth motor amplifier #3 (7% data lost, DR#M105027).
- RFC Catalog X/Ka on DSS-55 (1 observation; 1440 min): antenna stopped in EL (DR#M105017), 4 sources were impacted (1% data lost).